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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,638

06/23/2005

Yasuhiro Yamakoshi

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5367

270 7590 09/18/2008

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EXAMINER

VELASQUEZ, VANESSA T

ART UNIT

PAPER NUMBER

1793

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/540,638	<b>Applicant(s)</b> YAMAKOSHI, YASUHIRO	
	<b>Examiner</b> Vanessa Velasquez	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,11-24,29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,11-24,29 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>Aug. 22, 2008</u> .                                           | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 22, 2008 has been entered.

### ***Status of Claims***

Claims 1, 2, 11-24, 29, and 30 are presented for examination on the merits.

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy of JP 2003-004685 filed on January 10, 2003 has been received and placed in the file of record.

### ***Information Disclosure Statement***

One (1) information disclosure statement (IDS) was received on August 22, 2008. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal et al. (US 5,964,966).

Regarding claims 1 and 2, Goyal et al. teach a substrate comprising nickel and at most 15 atomic percent of a Group VB metal (col. 10, lines 17-21). Tantalum is a Group VB metal. The overlap between the ranges of the prior art and the claimed ranges is sufficient to establish a *prima facie* case of obviousness (MPEP § 2144.05 Section I). In addition, the substrate alloy may be deposited by sputtering (col. 12, lines 36-38, 59-61). Thus, it would have been obvious to one of ordinary skill in the art to form a

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sputtering target out of the disclosed composition because the substrate itself is made from a sputter deposition technique.

Still regarding claims 1 and 2, the phrase "for gate electrode" is intended use and will not be accorded patentable weight.

Regarding claims 15 and 16, Goyal et al. is silent as to the magnetic permeability of the substrate. However, it has been established that when the compositions of two products are identical or substantially identical, the two products are also expected to possess the same properties (MPEP § 2112.01 Section I). In the instant case, the substrate in Goyal et al. has a composition that encompasses the claimed ranges. Therefore, properties such as magnetic permeability would be expected to be same in both the claimed product and the product of Goyal et al.

Regarding claim 17, Goyal et al. teach that the grain size is less than 1000 microns, and more preferably less than 5 microns (col. 11, lines 37-41), which encompasses the claimed range.

4. Claims 11-14 and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal et al. (US 5,964,966) in view of Shindo et al. (US 6,485,542, hereafter US '542).

Regarding claims 11, 12, 18, and 19, US '542, drawn to a sputtering target, teaches that impurities interfere with the corrosion resistance of the material and should therefore be suppressed (col. 1, lines 52-57). More specifically, the total metal impurities should be at most 50 ppm (col. 1, lines 66-67 to col. 2, line 1). It would have

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been obvious to one of ordinary skill in the art at the time of the invention to decrease the impurity levels of the nickel-tantalum substrate of Goyal et al. to the levels taught by US '542 because high-purity sputtering targets are less susceptible to corrosion and exhibit enhanced magnetic properties (US '542, col. 2, lines 60-63).

Regarding claims 13, 14, 20, and 21, US '542 further teaches that the following elements should be present in the following amounts (col. 2, lines 50-59):

Oxygen	$\leq 10$ ppm (preferable)
Nitrogen	$\leq 1$ ppm (preferable)
Hydrogen	$\leq 0.5$ ppm (preferable)
Carbon	$\leq 10$ ppm (preferable)

US '542 makes clear that impurities in amounts exceeding the upper bounds of the aforementioned ranges are undesirable, as they contribute to decreased corrosion resistance (col. 2, lines 60-63).

Regarding claims 22 and 23, Goyal et al. is silent as to the magnetic permeability of the substrate. However, it has been established that when the compositions of two products are identical or substantially identical, the two products would also be expected to possess the same properties (MPEP § 2112.01 Section I). In the instant case, the substrate in Goyal et al. has a composition that encompasses the claimed ranges. Therefore, properties such as magnetic permeability would be expected to be same in both the claimed product and the product of Goyal et al.

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Regarding claim 24, Goyal et al. teach that the grain size is less than 1000 microns, and more preferably less than 5 microns (col. 11, lines 37-41), which encompasses the claimed range.

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal et al. (US 5,964,966) in view of Shindo et al. (US 6,485,542, hereafter US '542), and further in view of Shindo et al. (US 5,667,665, hereafter US '665).

Regarding claim 29, Goyal et al. in view of US '542 are silent as to the level of iron impurity content. US '665, however, is drawn to a method of making a high-purity metal for a sputtering target (col. 1, lines 6-8). In one aspect of US '665, a highly pure cobalt material is produced, in which amounts of "heavy metals" such as iron, nickel, and chromium are minimized to prevent hindrances in the performance of electrical devices (US '665, col. 1, lines 39-41). Specifically, the amount of iron is preferably at most 1 ppm (US '665, abstract). Although US '665 is drawn to cobalt, it would have been obvious to one of ordinary skill in the art to extend the **general teaching** of minimizing heavy metal impurities, as exemplified by US '665, to the nickel-tantalum alloy of Goyal et al. in view of US '542 because maintaining the purity of the sputtering target ensures that any product formed from the target (e.g., electrodes) also remains pure. The purity of an electrode is especially important in the fabrication of high-performance devices.

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6. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal et al. (US 5,964,966) in view of Shindo et al. (US 5,667,665, hereafter US '665).

Regarding Claim 30, Goyal et al. are silent as to the level of iron impurity content. US '665, however, is drawn to a method of making a high-purity metal for a sputtering target (US '665, col. 1, lines 6-8). In one aspect of US '665, a highly pure cobalt material is produced, in which amounts of "heavy metals" such as iron, nickel, and chromium are minimized to prevent hindrances in the performance of electrical devices (col. 1, lines 39-41). Specifically, the amount of iron is preferably at most 1 ppm (US '665, abstract). Although US '665 is drawn to cobalt, it would have been obvious to one of ordinary skill in the art to extend the **general teaching** of minimizing heavy metal impurities, as exemplified by US '665, to the nickel-tantalum alloy of Goyal et al. because maintaining the purity of the sputtering target ensures that any product formed from the target (e.g., electrodes) also remains pure. The purity of an electrode is especially important in the fabrication of high-performance devices.

### ***Response to Arguments***

Applicant's arguments regarding the combination of the Goyal et al. (US 5,964,966) and Ichihara et al. (US 6,033,536) references have been considered but are moot in view of the new grounds of rejection.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Velasquez whose telephone number is (571)270-3587. The examiner can normally be reached on Monday-Friday 8:30 AM-6:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

/Vanessa Velasquez/  
Examiner, Art Unit 1793